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[DIVISION OF ENTOMOLOGY, CIRCULAR No. 20.]

U. S. Department of Agriculture,

DIVISION OF ENTOMOLOGY.

ECONOMIC ORNITHOLOGY.

Washington, D. C., July [illegible], 1885.

The fact that birds are influential factors in checking the increase of insects injurious to vegetation has long been recognized, but the extent of the services thus rendered has never been positively ascertained. Moreover, great difference of opinion exists, particularly among farmers, as to whether certain well-known species are on the whole beneficial or injurious; and many kinds which are really of great practical value are killed whenever opportunity offers. For example, hawks and owls collectively are almost universally regarded as detrimental, while as a matter of fact several of them never touch poultry but feed almost exclusively on mice and grasshoppers.

The wholesale slaughter of small birds has been known to be followed by serious increase of noxious insects. On the other hand, invasions of insects which threatened to devastate large tracts of country have been cut nearly short by the timely services of some of our native birds.

In view of the above facts, and many others which might be cited, it is clear that a comprehensive systematic investigation of the inter-relation of birds and agriculture will prove of enormous value to farmers and horticulturists. Such an investigation has been undertaken by the newly-established branch of Economic Ornithology under the Division of Entomology of the Department of Agriculture, and the assistance and co-operation of persons interested are earnestly solicited.

The food of all birds consists either of animal matter or vegetable matter or both, and its consumption must be serviceable or prejudicial to the interests of mankind. Therefore, according to the food they eat, all birds may be classed under one of two headings—beneficial or injurious. Many species are both beneficial and injurious, and it is impossible to assign them to either category until the percentages of their food-elements have been positively determined and the sum of the good balanced against the sum of the evil.

In a very large proportion of our small birds the food varies considerably with the season, sometimes changing from vegetable to animal, or from injurious to beneficial. Furthermore, many birds feed their young upon substances which the adults rarely or never eat; and the young on leaving the nest sometimes greedily devour things which are discarded as they grow older. Hence it becomes necessary to ascertain the food of each species at different times of the year, and at different ages.

Information is desired on all questions relating to this inquiry, and special attention is invited to the following:

a—Has the Common Crow been observed to catch young chickens or to steal eggs?

b—Has it been observed to eat corn or other cereals in the field? If so, how long after planting, and how extensive was the injury done? Has the Crow been observed to feed upon injurious insects? If so, what kinds of insects were thus destroyed, and to what extent?

c—Has the Crow Blackbird or Grakle been observed to carry off the young of the Robin or of other small birds, or to destroy their eggs? When breeding near the house, has it been observed to drive off small birds (such as Robins, Blue-birds, etc.) which had previously made their abode on the premises? Has it been observed to eat corn or other cereals in the field? If so, how long after planting, and how extensive was

the injury done? Has the Crow Blackbird been observed to feed upon injurious insects? If so, what kinds of insects were thus destroyed, and to what extent?

d—Has the naturalized exotic, the so-called "English Sparrow," been observed to drive off any of our native birds? If so, what species were so expelled from their former haunts? Has this Sparrow been observed to feed upon cereals or other farm crop? If so, what kinds were injured and to what extent?

e—Has the "English Sparrow" been observed to feed upon or wantonly injure grapes or other fruits? If so, to what extent? What measures, if any, have been adopted to remedy the evil?

f—Have the Robin, Cat-bird, Brown-thrasher, Baltimore Oriole, or other birds been observed to feed extensively upon fruit? If so, what kind or kinds of fruit has been most injured by each species, and how extensive have been the depredations committed?

g—What birds have been observed to feed upon or otherwise injure buds or foliage, and what plants or trees have been so injured?

h—What birds, if any, have been observed to feed upon the canker worm, army worm, tent caterpillar, cut-worm, cotton worm, cabbage worm, currant worm, Rocky Mountain locust or other grasshoppers, periodical locust (*Cicada*), Colorado potatoe beetle, chinch bug, Hessian fly, or other noxious insects?

i—The Bobolink (Ricebird of the southern states) and Red-shouldered Blackbird congregate in vast flocks during their migrations and commit extensive depredations in certain parts of the South. The Division will be glad to receive detailed accounts of these depredations from persons living in the affected districts.

j—What birds are considered to be injurious to crops and small fruits, and what kinds are regarded as beneficial? On what facts are these opinions based?

k—Has any kind of bird been observed to feed upon the honey-bee? If so, what species, and how extensive has been the injury done?

In the investigation of Economic Ornithology many important secondary questions present themselves. Among them, the following may be mentioned as bearing directly upon the subject of inquiry:

1. At what season and for how long a period is the bird present?
2. If a summer resident, how many broods does it rear each season, and how many young constitute an average brood?
3. Does it take up its abode near the habitations of man, or does it inhabit districts remote from civilization?
4. Does it inhabit marshes, uplands, cultivated fields, or forests?
5. Where does it make its nest?
6. What places does it frequent in search of food?
7. Is it solitary or gregarious?
8. What effect does the settlement of a region have upon its bird-life?
9. What birds, if left to themselves, are likely to become most abundant as the country grows older?
10. Has any increase or decrease been observed from year to year in the numbers of any kind of bird in the same locality? If so, can such change be attributed to altered conditions in the bird's breeding grounds? If not, can any cause be assigned?
11. Has any increase or decrease of one species been observed to affect the numbers of another species? If so, can the fact be explained?
12. Has any species disappeared altogether? If so, can a cause for this disappearance be assigned?

The above questions can be answered as fully as the correspondent chooses on seperate sheets or on the blank sheet of this circular, the answer being lettered or numbered to correspond with the question.

When possible, the exact date should be given of all occurrences reported.

Persons willing to aid in the collection of bird's stomachs will, on application, be furnished with the necessary blanks and instructions.

Until October 1st all communications should be addressed to Sing Sing, New York; after October 1st to the Department of Agriculture, Washington, D. C.

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Ornithological Agent.